

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/769,376

REMARKS

Claims 1-6 are all the claims pending in the application.

Reconsideration and review of the claims on the merits are respectfully requested.

Claim Objection

According to the Examiner's suggestion, Applicants amend "Ra" to "R_a" and add a comma after the term "roughness" in claim 1, along with a comma after "R_a". Entry of the amendment is respectfully requested.

Claim Rejection - 35 U.S.C. § 102

Claims 1, 4 and 5 are rejected under 35 U.S.C. § 102(e) as assertedly being anticipated by USPN 6,261,664 to Beeson et al for the reasons given in the Office Action.

The Examiner states that the invention of Beeson is directed to an optical light diffusion multilayered transparent support. The Examiner states that Beeson teaches a uniform (average) thickness of 0.2 to 2 mm, within the claimed range of 100 to 800 micrometers. The photopolymerizable material layer is assertedly of cured epoxy deposited on a substrate, where the surface roughness (highly modulated surface having smooth bumps) is from 1 to 20 microns, which allegedly meets the limitation Ra of 0.8 nm or lower on at least one side.

Applicants respectfully traverse the rejection.

Beeson et al discloses that "The surface **42** of the photocrosslinked component **40** is highly modulated, exhibiting smooth bumps ranging in size from about 1 micron to about 20

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microns in both height and width." (See Beeson, column 5, line 65 to column 6, line 2). As is clear from the use of the term "bumps" therein, the sentence means that the convexo-concave shape like the highly-modulated surface 42 in FIG. 3 of Beeson is formed. In Beeson, the convexo-concave shape is formed for the purpose of refracting or scattering light in a number of directions.

On the other hand, in the present invention, the free surface is formed by the flow casting method and the thickness of the resin substrate is restricted to 100 to 800 μm , by which the superior surface roughness Ra such as 0.8 nm or lower can be achieved. The improvement of the present invention is shown by the comparison between the Example and Comparative Example in the specification of the present application (pp. 25-29). As a result, when the resin substrate for optical use having the surface roughness Ra of 0.8 nm or lower is used as the liquid crystal cell substrate, it shows satisfactory display quality without any light leakage.

The object of Beeson is to refract or scatter light in a number of directions. Accordingly, Beeson intentionally forms the convexo-concave shape on the surface of the component. On the other hand, the present invention is characterized in that the surface roughness Ra of 0.8 nm or lower as a mirror surface can be achieved for exhibiting satisfactory display quality when used as a liquid crystal cell substrate. Accordingly, the present invention is novel (and also unobvious) over Beeson et al.

Furthermore, Beeson describes a figure illustrating that in order to reduce backscattering of light, the component is coated with a transparent or translucent fill layer 152 as shown in FIG. 7. However, Beeson is silent about the surface roughness Ra of the fill layer. The superior

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surface roughness Ra, such as 0.8 nm or lower according to the present invention, can not be achieved until the free surface is formed by the flow casting method and the thickness of the resin substrate is from 100 to 800 μ m. Because Beeson does not describe any method of manufacturing the fill layer, the skilled artisan could not conclude that the surface roughness Ra of the fill layer would be 0.8 nm or lower.

Therefore, each and every limitation of Claims 1, 4 and 5 is not anticipated from the disclosure or teaching of Beeson. For the same reasons, these claims are also unobvious over Beeson.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(b).

Claim Rejection - 35 U.S.C. § 103

Claims 2, 3 and 6 are rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over Beeson et al in view of Stein et al (US 6,322,860) and Ichikawa et al (US 4,419,399) for the reasons given in the Office Action.

Applicants traverse the rejection.

Dependent Claims 2, 3 and 6 are rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over Beeson et al in view of two separate secondary references.

The rejection is respectfully traversed based on their dependency from Claim 1. The dependent claims are patentable for the same reasons as set forth above covering Claim 1. The secondary references do not overcome the deficiencies in the primary reference, Beeson.

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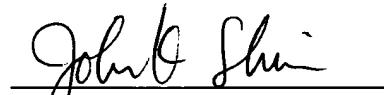
Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a).

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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PATENT TRADEMARK OFFICE

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Twice Amended) A resin substrate for optical use which comprises a multilayer structure having a surface roughness, [Ra] R_a, of 0.8 nm or lower on at least one side and having an average thickness of from 100 to 800 μ m.